

CLAIMS

1. Exploration device (1) to monitor the penetration of an instrument (2) in an anatomic structure, in particular a bone structure, comprising a source of voltage supplying at least two electrodes (3, 4) and a means to measure the impedance between the aforementioned electrodes (3, 4), characterised in that the aforementioned device (1) comprises a means of angular location formed by at least one electrode (3) punctually coinciding with a peripheral surface of the aforementioned penetration instrument (2), the coinciding surface of the aforementioned electrode (3) having a position set off from the longitudinal axis of the aforementioned instrument, as well as a means of detection of the position of the at least one aforementioned electrode (3).

2. Exploration device (1) according to claim 1, characterised in that the aforementioned electrode (3) punctually coincides with the lateral surface of the aforementioned penetration instrument (2).

3. Exploration device (1) according to claim 1 or claim 2, characterised in that the aforementioned electrode (3) punctually coincides with the peripheral surface of the distal end of the aforementioned penetration instrument (2).

4. Exploration device (1) according to any of the previous claims, characterised in that the aforementioned coinciding electrode (3) is moved in rotation.

5. Exploration device (1) according to the previous claim, characterised in that the aforementioned coinciding electrode (3) is driven at a speed of rotation so that the aforementioned electrode (3) sweeps at least 360 degrees per level of drilling of the aforementioned penetration instrument (2) in the bone structure.

6. Exploration device (1) according to claim 1, characterised in that comprises a plurality of coinciding angularly spaced fixed electrodes (3, 4, 7, 8, 9) and that the means of measurement of the impedance delivers a signal corresponding to each of the aforementioned electrodes (3, 4, 7, 8, 9).

7. Exploration device (1) according to claim 6, characterised in that the aforementioned electrodes (3, 4, 7, 8, 9) consist of longitudinally and angularly spaced punctual contacts.

8. Exploration device (1) according to claim 6, characterised in that the aforementioned electrodes (3, 4, 7, 8, 9) are formed of longitudinal strips.

9. Exploration device (1) according to any of claims 6 to 8, characterised in that the electrodes (3, 4, 7, 8, 9) are distributed around the longitudinal axis of the penetration instrument (2).

10. Exploration device (1) according to any of claims 6 to 9, characterised in that the electrodes (3, 4, 7, 8, 9) are symmetrically arranged with respect to the longitudinal axis of the aforementioned penetration instrument (2).

11. Exploration device (1) according to any of claims 6 to 10, characterised in that the aforementioned electrodes (3, 4, 7, 8, 9) consist of conducting rods of circular, semi-annular, rectangular and/or triangular section.

12. Exploration device (1) according to any of claims 6 to 11, characterised in that the aforementioned electrodes are formed by eccentric conducting rods.

13. Exploration device (1) according to any of the previous claims, characterised in that the aforementioned device (1) also comprises at least one electrode arranged at the distal end of the aforementioned penetration instrument.

14. Exploration device (1) according to the previous claim, characterised in that the aforementioned device (1) comprises two electrodes arranged at the distal end of the aforementioned penetration instrument, the aforementioned electrodes consisting of conducting rods of concentric circular section.

15. Exploration device (1) according to any of the previous claims, characterised in that the aforementioned means of detection consists of a visual marking preferably on the handle (6) of the aforementioned exploration device (1).

16. Exploration device (1) according to any of the previous claims, characterised in that the exploration device (1) comprises a handle (6) forming the aforementioned means of detection.

17. Exploration device (1) according to any of the previous claims, characterised in that it comprises a handle forming the aforementioned means of detection.

18. Exploration device (1) according to any of the previous claims, characterised in that it comprises a central channel for the passage of an additional instrument.